

Final Performance Report for NAG5-13707

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Summary of Research:

This spectroscopic program with the Far Ultraviolet Spectroscopic Explorer (FUSE) program was designed to identify ultraviolet-bright active galactic nuclei (AGNs) and quasi-stellar objects (QSOs) for follow-up spectroscopy with FUSE and the Hubble Space Telescope (HST). All of the FUSE spectra obtained for this snapshot program (FUSE identifier D808) have been examined for data quality and flux levels. As expected, only a small number of objects observed (4/19) have flux levels suitable for follow-up spectroscopy.

A portion of our effort in this program was devoted to comparing the spectra obtained in these snapshot exposures to others to determine if the spectra could be used for detailed scientific analyses. The resulting effort demonstrated that some of the brighter sources are relatively stable (non-variable), as determined through comparisons of the spectra at multiple epochs. For these brighter sources, the exposure times are simply too short to perform meaningful detailed analyses. Comparisons of the absorption lines in these spectra with those of higher signal-to-noise spectra, like those of PG1116+215 and H1821+643, showed that many of the lines of interest could not be characterized adequately at the S/N levels reached in the short snapshot exposures. As a result, the FUSE D808 observations are suitable only for their original purpose - flux determination.

Several bright objects identified as part of this program include:

HE0153-4520, flux $> 2 \times 10^{-14}$ erg cm $^{-2}$ s $^{-1}$ Å $^{-1}$ at 1000 Angstroms
IRASF04250-5718, flux $> 4 \times 10^{-14}$ erg cm $^{-2}$ s $^{-1}$ Å $^{-1}$ at 1000 Angstroms
RXJ2154.1-4414, flux $> 1.6 \times 10^{-14}$ erg cm $^{-2}$ s $^{-1}$ Å $^{-1}$ at 1000 Angstroms
S50716+714, flux $> 2.5 \times 10^{-14}$ erg cm $^{-2}$ s $^{-1}$ Å $^{-1}$ at 1000 Angstroms

All of these objects have been incorporated into the primary target lists for the HST Cosmic Origins Spectrograph. Identifying such objects for follow-up observations with HST/COS was the primary goal of this program, so the program was successful. In addition, some of the objects were included in proposed target lists for future FUSE observations. Given that the state of the FUSE observatory is uncertain at this time, it is unknown whether any of these objects will be re-observed with FUSE.

The results of this program have been communicated to the astronomical community via email and by word of mouth since the results in and of themselves do not warrant publication in an astronomical journal. However, these lists will be maintained for future observers. The data are archived in the Multi-Mission Archive at the Space Telescope Science Institute.